



**NON-DIRECTIONAL MAGNET FIELD BASED PROXIMITY RECEIVER
WITH MULTIPLE WARNING AND MACHINE SHUTDOWN CAPABILITY**

ABSTRACT

5 A hazardous area warning system with a non-directional magnetic field
based proximity receiver for warning personnel of an attendant hazard. The
receiver includes a x-axis receiver with an antenna directed in a x direction, a
y-axis receiver with an antenna directed in a y direction and a z-axis receiver
with an antenna directed in a z direction. The antennas may be a wire loop
wrapped around a ferrite core. The output from each of the three receivers
10 are combined in an adder. The combined result from the adder is
representative of the distance between the receiver and a warning transmitter
antenna. A comparator determines whether the received signal indicates an
attendant hazard, i.e., the receiver is too close to the warning transmitter.
The receiver wearer is warned of the attendant hazard, visually and/or tactilly,
15 e.g., with warning lights and/or vibrations. An encoder encodes the signal
indication and a transmitter transmits the encoded signal. A data link receiver
(located, for example, at a potentially hazardous machine) receives the
encoded signal from the proximity receiver. The data link receiver decodes
the encoded signal and activates a safety indicator light in response to the
20 decoded information, a green light indicating normal operation, a yellow light
indicating a caution or potentially hazardous condition, and a red light
indicating danger. The data link receiver may shutdown and/or disable the
machinery in a caution or dangerous condition.